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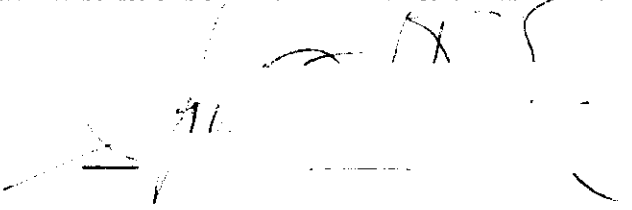

LAND USE ALONG MAJOR THOROUGHFARES

A THESIS

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by

Frederick Kellogg Bell

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SUMMARY

Urban major thoroughfares perform two basically incompatible functions: traffic movement and land service. This study explores land-use trends along major thoroughfares in an effort to suggest means of achieving a more compatible relationship between such thoroughfares and abutting uses. Specifically, the study:

(1) evaluates land-use trends along three major thoroughfares in Atlanta, Georgia. Land-use characteristics in three separate years, 1937, 1949, and 1959, were considered in order to determine trends.

(2) discusses the significance of the four most pronounced trends, namely the decline of single-family residential areas, the changing character of strip-retail districts, the rise of planned shopping centers, and the rise of high-density uses, such as office and apartment buildings.

(3) defines problems resulting from conflicts between these land uses and major thoroughfares, recommends possible solutions, and suggests means of implementing these solutions.

Due to the critical nature of problems along many major thoroughfares and the importance of these roadways in urban circulation patterns, it is concluded that there must be more specialized treatment of urban major thoroughfares and a closer coordination between thoroughfare and abutting land-use planning policy. It recommends that plans be developed for individual thoroughfares and land abutting them. A general program for the development of such a plan is included

as a guide. It is recognized that the local limitations of staff, time, and funds may restrict the scope of such a planning program and the number of thoroughfares that can be studied; however, the development of even one individual thoroughfare plan is likely to be of such potential value that its possibilities should be considered by all communities.

In addition, the thesis discusses solutions to four specific problems ordinarily resulting from conflicts between land uses and major thoroughfares, namely traffic generation, turning movements, protecting and encouraging single-family residential developments, and, finally, obsolete land uses and land-use patterns along major thoroughfares. Methods of implementing solutions are suggested.

It is emphasized, however, that efforts to solve individual and isolated problems along major thoroughfares should not be undertaken on a random basis, but should be included in a comprehensive plan for the development of that thoroughfare. Since conflicts between land uses and major thoroughfares will inevitably exist to some degree as long as these thoroughfares serve two functions, the recommended plan approach is not presented as an ultimate solution. It is, however, strongly recommended as a means of effectively improving the land use-major thoroughfare relationship and increasing thoroughfare efficiency.

CHAPTER I

THE PROBLEM

Urban major thoroughfares are required to perform two basically incompatible functions. The first, and more important, is to move vehicles in large volumes from one part of the city to another. The second is to give service and access to abutting land uses. In an effort to perform these conflicting functions, the roadway often fails to serve either one adequately. The result is declining roadway efficiency and, many times, deterioration of the adjoining land uses.

There are many areas of conflict between the thoroughfare and abutting uses, most of which are generally recognized. For example, uses generate and attract traffic, thus increasing vehicular volumes and producing conflicts between through traffic and that seeking access to the adjoining development. At the same time, the turning movements, stops and starts, loading operations, parking maneuvers, and pedestrian traffic that are created by adjacent uses present serious obstacles to smooth traffic flow and may pose dangerous traffic hazards. The appearance of roadside uses is often distracting and objectionable to the driver. On the other hand, noise, movement and fumes on the roadway often affect the stability and quality of the abutting uses, particularly of residences. The degree of the conflict will vary with the type and location of the adjacent use, but it is always there, an ever-increasing menace to:

(1) the efficiency of transportation movement; and

(2) the stability of adjoining land uses.

As such, it presents an ever-present problem to the planner.

Objectives

This thesis will explore land-use trends along major thoroughfares, and attempt to suggest means of achieving a more compatible relationship between major thoroughfares and abutting land uses. Within the scope of this study, the author intends to:

(1) define and evaluate the characteristics and significance of land-use development trends typically found along major thoroughfares;

(2) discuss and evaluate solutions designed to minimize conflicts between the thoroughfare and abutting land uses; and

(3) suggest methods of implementing such solutions.

The area of study will be limited to the four most significant trends in land-use development found along urban major thoroughfares, which are the following:

(1) the decline of single-family residential areas;

(2) the changing character of strip-retail districts;

(3) the rise of planned shopping centers; and

(4) the rise of high-density uses.

Major Thoroughfares: A Definition

The official designation of the roadways included within the scope of this study may vary according to local practice. Often, they are referred to as "major streets," "arterials," or by various other names. Despite the differences in terminology, they ordinarily serve

the same basic function and operate as an integral part of every urban street system. For purposes of clarity, they will be designated as "major thoroughfares" throughout this study and are defined by the author as follows:

Major thoroughfares are those principal vehicular transportation surface routes radiating to and from metropolitan centers or encircling them. Their primary function is the quick, safe, and efficient movement of people and goods via automotive transport. Access from abutting properties onto these routes is not limited and intersections are generally at grade.

As the definition indicates, expressways and other limited-access routes will not be considered in this thesis.

CHAPTER II

STUDYING LAND-USE TRENDS ALONG MAJOR THOROUGHFARES

As a first step toward achieving a better relationship between major thoroughfares and abutting land uses, local officials must know land-use trends along such thoroughfares. This chapter will discuss the four selected trends which were listed on page 2 of Chapter I, and evaluate the desirability of selected land uses and land-use groups as occupants of land along major thoroughfares. This discussion will be preceded by a brief explanation of the study conducted to obtain the information presented in this chapter.

The Study

The information presented in this chapter was compiled primarily from:

(1) a review of pertinent literature in the field; and

(2) a detailed survey of land-use conditions along three major thoroughfares in Atlanta, Georgia.

The three major thoroughfares were Peachtree Street, Spring Street, and Stewart Avenue. These thoroughfares were selected because:

(1) they were all officially designated as major thoroughfares in the Atlanta Comprehensive Plan of 1958;

(2) they all provided important access between the central areas of the city and outlying points;

(3) the abutting land development provided a varied sample of

land uses generally found along major thoroughfares; and

(4) they offered useful examples of problems and trends under study in this thesis.

Separate land-use surveys were conducted along the selected thoroughfares to ascertain land-use characteristics during three different years: 1937, 1949, and 1959. The first year, 1937, represents an era when the automobile was well established as a dominant form of transportation in America. To discover the impact of the post-war years on the land under study, the character of land use in 1949 was also surveyed. Finally, the year 1959 was chosen to reflect present-day conditions.

The survey information for 1937 and 1949 was compiled principally from City Directories and land-use maps. The 1959 survey is also based on information compiled from these sources and from aerial photographs, supplemented by a personal land-use survey conducted by the author during 1959.

The Selected Thoroughfares: A Description

The location of the selected thoroughfares and their relationship to the Atlanta Central Business District and other significant points are indicated on Figure 1. Although two of the streets extend to areas beyond the city, the study was restricted to those portions located within the Atlanta City Limits. Following is a description of each of the three thoroughfares.

Peachtree Street. This thoroughfare is a principal connector between the Central Business District and Atlanta's northeast residential

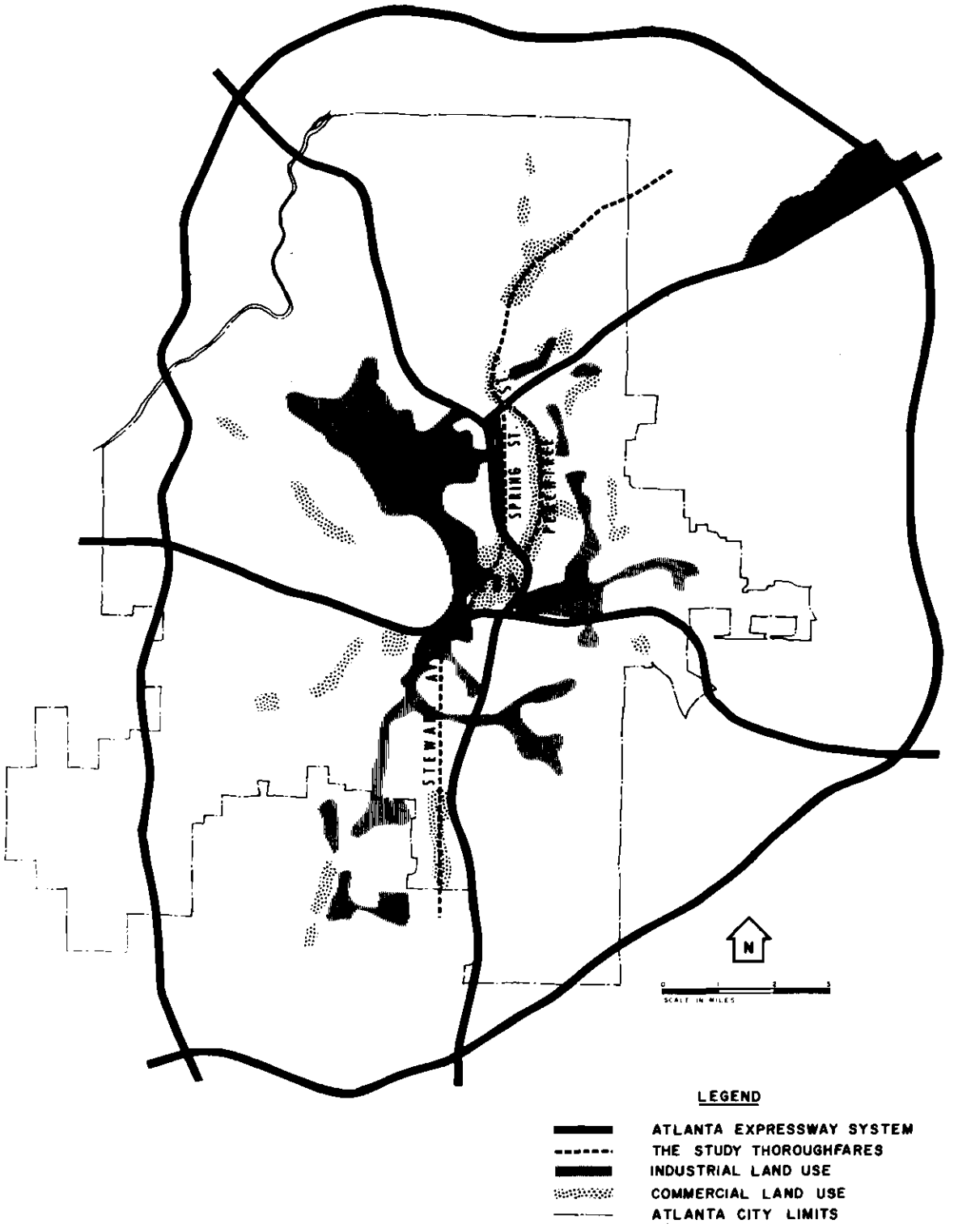


Figure 1. The Study Thoroughfares -- General Relationship to Atlanta's Expressway System and Land Use Patterns.

areas. The survey of land-use characteristics was confined to a distance of 9.03 miles, between the Central Business District and the city limits.

Spring Street. Like Peachtree Street, Spring Street originates in the Central Business District and extends northward. It terminates at its intersection with Peachtree Street, 3.06 miles north of the Central Business District. This intersection is less than one-fifth of a mile from the Peachtree Street-Northeast Expressway interchange. Portions of Spring Street are flanked, immediately to the west, by the North Expressway. Although Spring Street bears a Federal Highway route number, it carries little inter-regional or interstate traffic. Like Peachtree Street, it serves primarily as a principal route between the Central Business District and northeast Atlanta.

Stewart Avenue. Stewart Avenue originates in a warehousing and industrial area, approximately one-half mile southwest of the Atlanta Central Business District. The portion of the thoroughfare under study extends southward for a distance of 2.70 miles from the industrial area to the city limits. For years, Stewart Avenue was a key Federal highway, serving as the principal entrance into the city from all points to the south. In 1954, the South Expressway was opened. The expressway lies to the east of Stewart Avenue and parallels it. Soon to become part of the Federal Interstate Highway System, the expressway has diminished the need for Stewart Avenue as a through-traffic carrier.

Summary of 1959 Land-use Characteristics along the Three Thoroughfares. In 1959, retail outlets and offices were the dominant land

uses abutting Peachtree Street. There were also many residential uses, particularly apartments. Along Spring Street, light industrial, wholesale, and automotive sales and service activities were predominant. Stewart Avenue was abutted by a mixture of industry, warehousing and retail outlets, entertainment establishments, and residential uses. Land-use characteristics along the three thoroughfares are illustrated in more detail on Figures 5 through 9 in Appendix A.

Following is a discussion of four selected trends in land-use development along these major thoroughfares.

The Decline of Single-family Residential Areas

Abutting single-family residential developments pose a minimum of obstacles to thoroughfare efficiency. They generate little traffic and are often pleasant, well-landscaped, and visually appealing to passing motorists. The only conflicts, detrimental to the thoroughfare, are turning movements to and from the abutting property, which can disrupt smooth traffic flow. However, even this conflict is negligible when compared to those created by other land uses ordinarily found along major thoroughfares.

On the other hand, the thoroughfare is not always considered a desirable neighbor by abutting single-family residential property owners and occupants. Heavy traffic volumes on thoroughfares create noise, fumes, and sights detrimental to the residents. At times, thoroughfare congestion may adversely affect accessibility to the abutting property. In addition, a heavily traveled thoroughfare represents a safety hazard, particularly to families with children. As a result, there has been a rapid decline in the number of single-family residences

located along the three major thoroughfares, which is illustrated in Table 1. The number of residences abutting the three thoroughfares decreased almost 50 per cent over a 22-year period.

Table 1. Number of Single-Family Residences Along Three Major Thoroughfares During Selected Years -- 1937, 1949, 1959

Thoroughfare	No. of Single-Family Residences			Total Change
	1937	1949	1959	
Peachtree Street	215	136	63	- 152
Spring Street	71	33	5	- 66
Stewart Avenue	208	252	186	- 22
Total	494	421	254	- 240

Sources: 1959 Field Survey
Atlanta City Directory: 1937, 1948-49, 1959

The Changing Character of Strip-retail Districts

There has been a change in the character of strip-retail development along major thoroughfares. The change is essentially a design readjustment to customer needs. The older strip areas, including structures built side by side nearly to the street line, were designed in order to attract both pedestrians walking on the sidewalk and motorists passing on the street. The new strip areas are oriented primarily to serve the motoring public, since most of the outlets in such areas are designed to include off-street parking in addition to direct-access facilities from the street.

Older strip areas included a mixture of retail outlets featuring goods such as food, clothing, drugs, furniture, and hardware. While the majority of these areas continue to exist today, many are confronted with substantial financial problems. Few new retail outlets are located in these older areas. On the other hand, there have been large increases in the number of outlets, designed exclusively for motorist convenience, which are being constructed in strip fashion along major thoroughfares. Many of these outlets, such as the following, are also often found in older strip areas:

Super markets

Branch department stores

Restaurants and taverns

Liquor stores

Bowling alleys

Laundry and dry-cleaning pick-up points

Some outlets are so constructed that the motorist may drive onto the property, transact his business, and depart without ever having to leave his car. Among the many uses which have adjusted to this new trend in strip-retail development are the following:

Drive-in restaurants

Drive-in motion picture theatres

Drive-in banks

This trend has been especially noticeable since World War II. For example, along the three thoroughfares, the number of drive-in banks rose from none to 10 between 1949 and 1959. During the same period, drive-in restaurants increased from three to six, and drive-in

movies from none to two.

Uses directly related to the sales and service of automobiles constitute an additional form of the new "motorist-oriented" strip development which is increasing along major thoroughfares. Such uses include:

Gasoline service stations

New car sales and service agencies

Used car agencies

Automobile repair shops

Unlike the uses previously mentioned, outlets of this nature existed in substantial numbers as early as 1937 along the three Atlanta thoroughfares. They all experienced a gradual growth in numbers over the 22-year study period, as Table 2 indicates:

Table 2. Number of Automobile Service Uses Along Study Thoroughfares -- 1937, 1949, 1959

Use	Total Number in 1937	1949	1959	Net Change 1937 - 1959
New car sales and service	7	6	16	+ 9
Used car sales	16	41	43	+ 27
Auto repair shops	22	21	30	+ 8
Gasoline service stations	45	57	59	+ 14

Sources: Personal Field Survey, 1959
Atlanta City Directory, 1937, 1948-49, 1959.

The older strip district has long been a source of many traffic problems. Traffic congestion is often intense. Thoroughfare efficiency is further hampered by truck traffic, buses, turning movements, stops and starts (particularly at intersections), parking maneuvers, loading and unloading operations, and pedestrian movements. Many of these problems are not evident in more modern strip developments where parking and loading maneuvers and pedestrian movements are removed from the streets. However, although many of the problems which obstruct efficient major thoroughfare operation in the older districts are not found in newer areas, some still remain. Foremost among these are the traffic-generating qualities of the land uses and the resulting turning movements they create. Whether old or new, strip-retail districts are areas where the efficiency of major thoroughfares is severely reduced.

The Rise of Planned Shopping Centers

The most dramatic development in retail land-use character along major thoroughfares has been the rise of the planned shopping center in recent years. In contrast to the strip district, which is the product of unplanned, natural economic processes, the shopping center is designed, planned, and developed as a unit and offers a wide selection of goods and services from carefully selected merchandisers. Many of the advantages of shopping centers over strip-retail areas are illustrated on Table 4, which appears in Appendix B and which has been reproduced from a report published in 1959 by the Tulsa, Oklahoma, Metropolitan Area Planning Commission. In essence, this table exemplifies the fact that shopping centers have profited from the experiences of the older strip

districts. Vehicular maneuvering operations have, for the most part, been removed from the thoroughfare. Outlets are carefully located with relation to one another for maximum shopper convenience. There are no curb parking or loading problems. Customers are provided with an accessible, attractive shopping area. As a result of these and other improvements, planned shopping centers have rapidly increased in popularity and have had a significant influence on the economic stability of many of the older strip districts:

> The new shopping centers have...very deeply affected the older intercepting shopping districts, many of which are witnessing very large drops in volume (1).

The rapid rise of shopping centers is evidenced by findings of the study of land use along the three Atlanta major thoroughfares. Shopping centers increased from none to four between 1949 and 1959 along these routes. Retail outlets that were formerly located in strip districts are now being opened in these planned centers. For example, the Atlanta survey indicated that the total number of specialized clothing and accessory shops located along the three thoroughfares had risen from 14 in 1949 to 45 in 1959. Twenty-six of the 31 new shops had opened in planned shopping centers. The remaining five had been located in existing strip-retail districts. Department stores (mostly surburban branches of downtown stores) and variety stores increased from seven to 17 during the 1949-1959 decade. Eight of the 10 new ones were located in shopping center complexes. Convenience goods and service outlets, particularly the following, experienced the same trend:

Drug stores

Barber shops

Beauty shops

Laundry and dry-cleaning establishments

Super markets.

As previously pointed out, the developers of shopping centers have eliminated, through careful design, many of the traffic problems which are ordinarily found in older strip districts. However, not all of the problems that shopping centers pose were solved. In particular, the high volumes of traffic and vehicular turning movements generated by planned shopping centers remain as substantial threats to major thoroughfare efficiency.

The Rise of High-density Uses

High-density uses, such as apartments and office buildings, are often found on land abutting major thoroughfares. As a result of increasing apartment and office construction, more and more people were working and living alongside the three Atlanta major thoroughfares in 1959 than at any other time during the 22-year period. However, this construction was concentrated primarily on Peachtree Street, indicating a highly selective attitude on the part of developers with regard to sites for new apartments or offices. Following are detailed discussions of trends in apartment and office building development along the three thoroughfares.

Apartments

Table 3 shows trends in the total number of dwelling units

located in apartment developments along the Atlanta thoroughfares. A net increase of 1,374 apartment dwelling units occurred on the three routes over the 22-year period. Land along Peachtree Street, where a substantial amount of apartment development existed in 1937, was developed with new construction that more than doubled the 1937 dwelling-unit figure. Most of this new development took place in the post-war decade. Apartments have never been located in significant numbers along Spring Street. After the number of apartment dwelling units declined from four to none between 1937 and 1949, there was an increase to 24 by 1959. Stewart Avenue realized a large gain between 1937 and 1949, but the number declined during the 1949-1959 decade.

Table 3. Number of Apartment Dwelling Units Along Study Thoroughfares During Selected Years -- 1937, 1949, 1959

Thoroughfare	No. of Apartment Dwelling Units in			Total Change 1937 - 1959
	1937	1949	1959	
Peachtree Street	1,208	1,401	2,436	+ 1,228
Spring Street	4	0	24	+ 20
Stewart Avenue	12	151	138	+ 126
Total	1,224	1,552	2,598	+ 1,374

Sources: Field Survey, 1959
Atlanta City Directory, 1937, 1948-49, 1959

Increases in apartment dwelling units along Spring Street were all in the form of converted single-family residences. The great

majority of apartment dwelling units on Stewart Avenue are located in one garden-type development. Most of the dwelling units which disappeared along Stewart Avenue between 1949 and 1959 were located in converted single-family residences.

Several factors have contributed to the dominance of Peachtree Street as an "apartment" thoroughfare, as compared to the others:

(1) It has never had any significant amount of industrial development.

(2) It is a "status" street, a principal route toward and through the city's more fashionable residential areas.

(3) The dominant direction of Atlanta's growth has, for many years, been toward the north.

(4) The average lot width along Peachtree Street was 110 feet. This width is more conducive to multiple-family dwelling construction than, for example, lot widths along Stewart Avenue, which averaged approximately 70 feet.

As Table 3 indicates, apartments are not a recent phenomenon on land adjoining major thoroughfares. They have long been an accepted occupant of such land. Today, there are simply more of them.

Office Buildings

In limited areas, the trend toward office building construction has been extremely intensive. For example, the section of Peachtree Street located between Fourteenth Street and the Northeast Expressway interchange was once an area of fine old residential homes on large, spacious lots. Figure 2 illustrates what has happened to the character of land use in this section, In 1937, there were no office

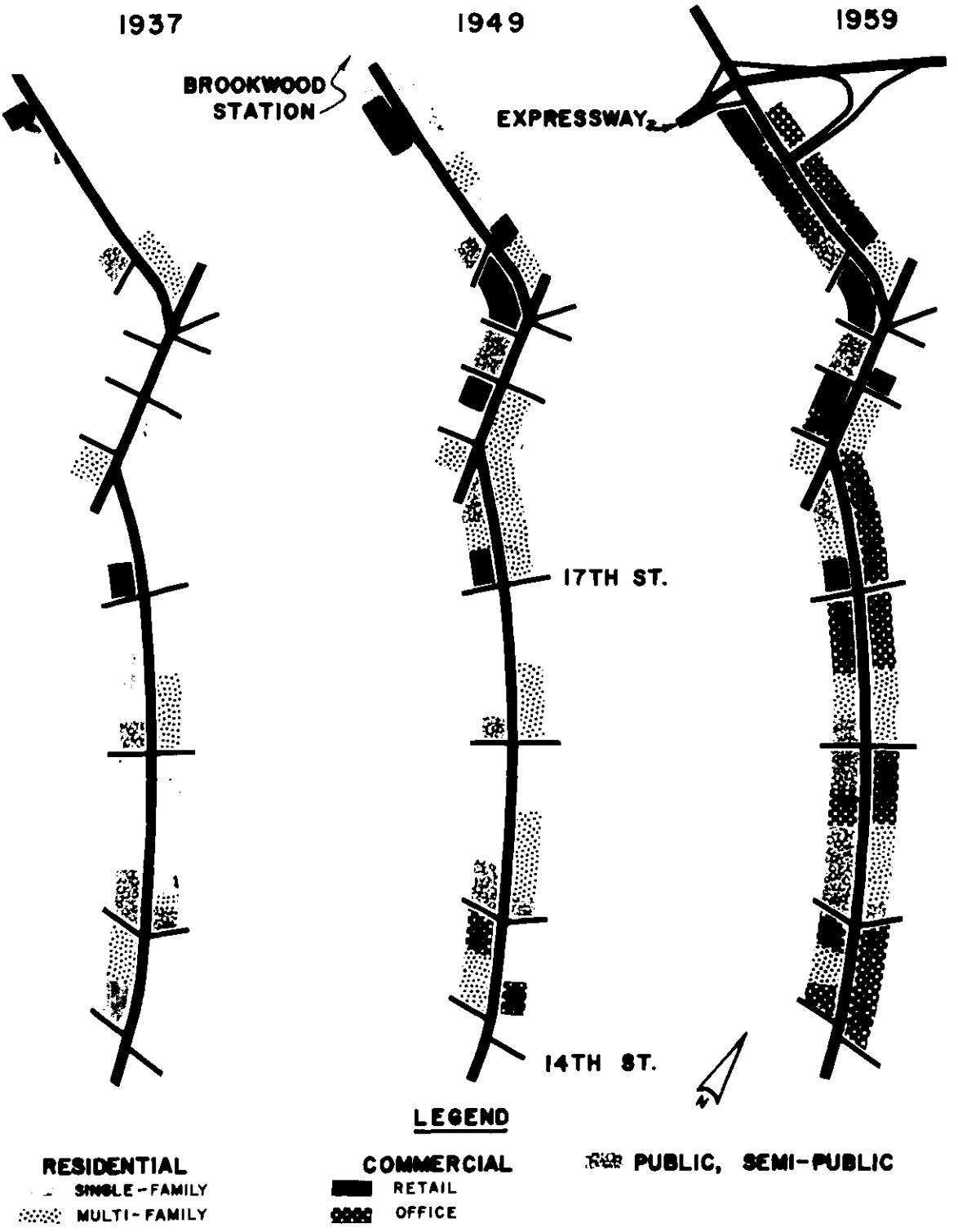


Figure 2. 14th Street--Brookwood Station Area, Land-Use--1937, 1949, 1959.

buildings. By 1959, 23 had been constructed. Over this 22-year period, single-family residences disappeared almost completely.

Offices along Peachtree Street are occupied primarily by regional or branch offices of national concerns, insurance firms, manufacturers' representatives, and professional people such as physicians. There are several reasons why many individuals and firms prefer office locations in outlying areas along Peachtree Street. Primary among these factors is the fact that many prospective office tenants do not require a "downtown" location for successful operation and are, therefore, attracted to Peachtree Street, where rents are somewhat lower.

The new office buildings on Peachtree Street vary greatly in physical size and shape. They usually range from four to 10 stories in height. Most of them have off-street parking facilities.

As evidenced by the Fourteenth Street-Brookwood Station area, office buildings tend to locate together. Office development of this nature is likely to continue in the future, particularly on "status" streets such as Peachtree Street, and in cities which are regional centers.

High-density Uses and the Major Thoroughfare

Although high-density uses are likely to appear only in limited areas, they can pose substantial obstacles to efficient major thoroughfare operation. The most serious problem created by apartments and office buildings is the intensive traffic-generating quality of these uses. The situation is especially critical in the case of office buildings, where the heaviest periods of traffic generation coincide

with the peak movement hours on the thoroughfare. Turning movements complicate the problem. Curb parking, loading operations, and pedestrian traffic often hamper thoroughfare efficiency further. While apartment developments are not as likely to affect traffic flow during peak periods, they pose the same obstacles to efficient thoroughfare operation at other periods of the day.

The Desirability of the Uses Discussed as Occupants of Land Along Major Thoroughfares

The preceding discussion evaluated development trends of certain types of land uses which are found along major thoroughfares. Each of the uses or use groups conflicts, to some degree, with the efficient operation of the thoroughfare. Major thoroughfares, traditionally, have been expected to serve uses on abutting land. As long as they perform this function, conflicts between use demands and roadway efficiency are inevitable. Despite the conflicts they may create, each of the uses under discussion is an acceptable occupant of land along such thoroughfares.

Certainly, the types of commercial and high-density land uses discussed are more useful and accessible if they are located along major thoroughfares. In terms of convenience and service to customers, employees, and residents, sites abutting major thoroughfares must be considered desirable for these uses. Because most of them are high traffic-generators, it is, in fact, necessary that they be located on a high-capacity route.

The pattern of development of some groups of uses is open to question. The older strip-retail district is the obvious example.

Although the uses within the district are acceptable occupants of land along major thoroughfares, there are strong indications that the development patterns of such areas are obsolete. Because of this fact and because such areas are ordinarily centers of extreme conflict between thoroughfares and abutting uses, it is recommended that local officials strongly consider the possibility of demolishing the older strip areas and redeveloping the land to assure a more desirable relationship between the thoroughfare and abutting uses. Procedures for undertaking a task of this nature will be discussed in Chapter III.

The status of the single-family residence as an occupant of land along major thoroughfares is also open to question. The deteriorating effect that such high-capacity thoroughfares can have upon single-family dwellings is evidenced by the decline in the number of these uses along major thoroughfares. Yet, single-family residences produce few obstacles to roadway efficiency. These uses are low traffic-generators and usually provide an attractive vista for passing motorists. For these reasons, they are recommended as a highly acceptable form of land-use development along major thoroughfares. There is some opinion that the construction of single-family residences along major thoroughfares is not economically feasible. However, a few scattered developers do not apparently agree with this philosophy. These developers are not only building single-family residences on land abutting major thoroughfares, but are also developing means to improve the relationship between this particular use and major thoroughfares. Some of these techniques will be discussed in Chapter III.

Sites along major thoroughfares are recommended as acceptable for the remainder of the uses discussed. In many instances, the economic survival of the use may depend upon such a location.

Accepting the fact that these uses are logical occupants of land along major thoroughfares and that frictions between the thoroughfare and abutting uses are inevitable, local officials must place primary emphasis on efforts designed to reduce the areas of friction. The principal problems confronted when dealing with commercial or high-density uses are high traffic-generation and turning-movement characteristics. In certain cases, such as older strip-retail areas, obsolete development patterns must be overcome. If the single-family residence is to be retained and new ones encouraged, means must be found to stabilize the quality of such uses against the deteriorating effects of the thoroughfare. In addition, single-family residences, like the other uses discussed, pose turning-movement problems which can reduce thoroughfare efficiency. Chapter III will discuss approaches that communities might use in an effort to relieve these obstacles to a compatible relationship between major thoroughfares and the uses under discussion.

CHAPTER III

SOLUTIONS TO CONFLICTS BETWEEN LAND USES AND MAJOR THOROUGHFARES

As pointed out in Chapter II, conflicts between major thoroughfares and abutting land uses are inevitable as long as these roadways are required to perform the two-fold function of moving traffic and providing access to adjacent property. Yet, there are means by which conflicts can be reduced and thoroughfare efficiency improved. Fundamental to the solution of these specific conflicts is the development of sound policy, in the form of a plan, for individual thoroughfares and the use of land abutting them. This chapter will include a discussion of such a plan and its elements. In addition, emphasis will be given to those specific areas of conflict mentioned in Chapter II, including the high traffic-generating characteristics of land uses along major thoroughfares; turning movements; and such special land-use problems along major thoroughfares as single-family residences and obsolete land-use patterns.

Plans for Individual Thoroughfares

Throughout the years, many approaches to problems resulting from land use--major thoroughfare conflicts have been attempted. Most, however, have been the hit-and-miss variety, designed to solve immediate problems in local areas, with little thought given to the overall function of the entire thoroughfare. Rarely has there been an attempt to develop sound policy with regard to the land-use and

roadway problems along the entire length of individual major thoroughfares--a plan designed to reflect a combination of land use and major thoroughfare policy for a single thoroughfare. Such a plan would set forth proper development for land use along the thoroughfare and improvements on the thoroughfare itself. It would be a comprehensive program of development for the entire thoroughfare. At the same time, it would give a degree of consideration to the unique problems of individual thoroughfares not ordinarily evident in the broad-scale major thoroughfare plans found in most cities today.

Only through the development of such plans can a more effective and efficient relationship between the thoroughfare and abutting land uses be achieved. It is, therefore, recommended that communities seriously consider and undertake the development of plans of this nature. Following is a general description and guide which communities might use in the formulation of such plans.

Setting Up Priorities

Since separate plans must be developed for each individual thoroughfare under this program, it is anticipated that the limitations of time, funds, and personnel available to local communities will restrict the total number of individual thoroughfares that can be studied. Due to these limitations, it will undoubtedly be necessary to establish priorities with regard to the thoroughfares to be studied and the timing of these studies.

The selection of thoroughfares to be studied and the timing of the studies should naturally be based on the community's most immediate major thoroughfare operational problems. Top priorities should

be given to roadways proposed for improvement and widening. Where possible, no major improvement projects should be undertaken on any thoroughfare unless preceded by the development of a plan for that thoroughfare and the land abutting it.

Even if a community finds itself unable to undertake a study of more than one of its major thoroughfares, it should be encouraged to develop that single plan. Certainly, a detailed study of one problem thoroughfare can be of great value in finding ways to improve the operation of that thoroughfare. It may also uncover approaches that might be effectively used for dealing with similar problems on other thoroughfares.

Developing the Plan

With the establishment of the priority list of thoroughfares to be studied, the community is in a position to undertake the next stage, namely, the process of actual plan development for a specific major thoroughfare. Such a plan might be developed according to the following phases.

The Research Phase. There are, generally, two objectives to the research phase; namely, to determine what currently exists and to estimate what can be expected in the future. However, this information alone will be of little value unless there are more positive research objectives in mind. Research should evaluate the efficiency of the existing land use--major thoroughfare relationships in terms of the function assigned to both by the community. In addition, it should seek out problems and anticipate possible solutions. For example, the study of the land along a certain major thoroughfare should indicate,

at least on a preliminary basis, whether front yards are deep enough to permit the construction of possible frontage roads or other facilities that might ease traffic problems. At this stage, it is necessary to estimate only if a certain solution could be, not if it should be, applied to a specific situation. Frontage roads and other possible approaches to problems often found along major thoroughfares will be discussed later in this chapter.

Thus, the research phase, in addition to producing pure information and background, serves as a scale by which the current performance of the thoroughfare is measured against desired performance and evaluates the possibility of applying various solutions to problem areas. Following are two general studies that might be conducted as part of the research phase and specific information that should be sought:

1) A traffic study. This study would include a survey of the thoroughfare and its operation. The inventory of the thoroughfare itself should include evaluations of roadway condition, determinations of traffic capacity along the course of the thoroughfare, studies of intersections, curb parking, traffic controls, and curbcuts, in addition to other information that the community might consider to be of value. From the operational standpoint, research should be directed toward determining such vehicular traffic characteristics as volumes, turning movements, vehicular types, parking, traffic desires, high accident points, and speed and delay tendencies.

Objectives of this research phase are to determine what is happening on the thoroughfare, whether or not present performance is satisfactory, and, if not, what factors produced by the roadway or the traffic it bears are responsible for the inefficiency. As pointed

out earlier, these studies also afford the opportunity to consider the application of possible remedial approaches to individual problem areas.

2) A land-use study. This phase should include several principal areas of research. First, a detailed inventory of existing land-use characteristics should be conducted, designed to collect information pertaining to type of use, population densities, and use location. Special emphasis should be given to the nature of platting, existence of alleys, building setbacks, parking areas, and other similar physical factors. As was the case with the traffic study, the objective of this inventory is to determine what exists and what problems are in evidence as a result of past land-use development. Furthermore, efforts should be made to evaluate the relationship of abutting land uses to the thoroughfare, the areas of conflict, and means of relieving these conflicts.

In addition, future land-use needs along the thoroughfare should be estimated. A study of past and present development trends, such as those conducted by the author along the three Atlanta major thoroughfares, can be a helpful guide in efforts to determine future development. In addition to studying the nature and type of uses likely to be located on this land, the requirements of such uses in terms of location, site size, parking, access, and the traffic volumes these uses are likely to generate should be estimated. This information will clarify the role the thoroughfare must play in the future and aid in the determination of what roadway improvements and land-use controls will be necessary to better enable it to serve that role.

At the completion of the research phase, local officials should

have an accurate analysis of the thoroughfare and the land abutting it, the efficiency of their use and operation in terms of the functions assigned, the problems and conflicts, their sources and causes, and possible remedial approaches to problem areas. The next phase is the preparation of a program for thoroughfare and land development between the land uses and the roadway.

The Plan Phase. Based on the insight provided by the preceding studies, a plan for the thoroughfare and abutting property should be developed, emphasizing the elements included in the following outline:

I. The Future Role of the Thoroughfare

II. The Detailed Plan for Development of the Thoroughfare and Adjoining Properties

  A. The Plan

  B. Areas to be Purchased

  C. Proposed Controls

III. Financing

First, the future role of the thoroughfare must be decided upon. This is a basic policy decision which community leaders must make before the actual plan can be developed since, obviously, many of the plan proposals and recommendations will be intended to enable the thoroughfare to fulfill its role more effectively.

Next, the plan itself should set forth what development goals the community decides upon for the thoroughfare and adjoining land. This should be a detailed proposal, recommending specific courses of action for improvement, including roadway and land development projects, areas to be purchased, and controls, for both traffic and land, that will be required for plan implementation.

Finally, methods of finance should be itemized, designed to equate the plan proposals with the community's ability to pay. Here, specific projects recommended in the plan should be fitted into a priority and timing schedule which could extend over a period of years. Factors influencing the choice of priorities will, of course, include local needs and local abilities to finance the costs. The priority schedule should include the estimated costs and the sources of finance for each project.

Special Problems

Within the broad objective of achieving a better relationship between individual major thoroughfares and abutting land use, the plan for each thoroughfare must be designed to recommend solutions to specific areas of conflict which exist along the roadway under study. This section will consider possible solutions to four problems resulting from these conflicts which are common to many thoroughfares. They include traffic generation, turning movement, the protection and encouragement of single-family residential development, and obsolete land uses and land-use patterns. Procedures for dealing with local problems will, of course, depend on local conditions. These methods are offered, however, as a starting point, a guide toward possible approaches which local officials might consider for incorporation into an overall plan. It is emphasized that these approaches, if used, should be incorporated into the overall plan for roadway and land-use improvement, rather than being applied to individual problem areas on a haphazard basis.

Traffic Generation

Short of the complete elimination of land uses along major thoroughfares, there appear to be only two possible means of overcoming the effect that the traffic-generating capacities of land uses have upon the operating efficiency of major thoroughfares. Since the problem is essentially one of achieving a better balance between thoroughfare capacity and the needs of the abutting land uses, the solution lies in the ability of local communities to increase thoroughfare capacities, to more effectively control the traffic-generating characteristics of abutting uses, or both.

The capacity of the thoroughfare can be increased through street widening and other improvement programs. However, thousands of miles of urban thoroughfares are improved in some fashion annually, yet the problem remains and grows more critical. Thus, while improvement and widening programs may offer some relief, experience has shown that they offer no complete solution to the conflicts resulting from high traffic-generating characteristics of land uses along major thoroughfares. In fact, many experts feel that roadway improvements tend to intensify land-use development along the affected thoroughfare, thus attracting more traffic and negating, to a great extent, the benefits of the newly increased capacity.

Efforts to plan and control the amount of traffic generated by abutting uses are likely to be more effective than thoroughfare improvements since they deal more directly with the source of the problem. Land-use planning and controls, particularly zoning, have long been influential in the development of land along urban major thorough-

fares. But, like street improvement programs, land-use planning and efforts to implement those plans have, in the past, been inadequate to the task of regulating thoroughfare congestion. One reason for this may be the apparent failure, in the past, to give enough emphasis to land-use planning and land-use controls as a possible means of regulating the densities of uses abutting major thoroughfares.

Experts are rapidly recognizing the inadequacies of land-use planning controls in this field. They are further recognizing that more effective use of controls such as zoning will be necessary in the future if any headway is to be made against the problems resulting from the traffic-generating characteristics of land uses along major thoroughfares. This is particularly true in view of the increasing evidence that street widening, construction, and improvement programs, by themselves, are not enough to reduce congestion:

> ...Solutions thus appear to depend not simply on measures designed to provide additional transportation capacity, but on the ability to develop urban communities in which satisfactory transportation is possible. The opposite course of attempting to meet whatever demands arise from unplanned growth seems doomed to continuing failure.
>
> The principal attack on the demand side must be through land use planning and zoning, which establish the pattern of urban development and the location, size, and employment of urban structures, control the demands on public services, and underlie the generation of traffic (2).

In the future, there must be more stringent control over the traffic-generating characteristics of uses abutting major thoroughfares. Land-use densities must be more carefully planned with relation to thoroughfare functions and capabilities.

There must be a closer relationship between land-use planning

and major thoroughfare planning. This can be achieved, to a large degree, through the development of individual thoroughfare plans such as the one just discussed.

Since such plans are specifically intended to coordinate abutting land uses and the thoroughfare into a functional unit, they can be used as the basis for programs of control designed to balance land-use densities with individual thoroughfare capacities. The influence of these plans will be somewhat limited by the fact that they consider only those uses on property abutting the thoroughfare. To achieve a greater control over densities of land uses which feed traffic onto the thoroughfare but which are not located on adjoining property, efforts must be made to equate the broader land-use plan proposals of the community with individual thoroughfare capabilities. Recommended land uses and land-use densities can be implemented through the application of controls such as zoning.

Turning Movements

Closely related to the problems of traffic generation are turning movements onto adjacent properties and intersecting streets. Both are the result of the attraction of land uses which lie nearby or adjacent to major thoroughfares and both can contribute to significant reductions in thoroughfare efficiency. Following are several approaches which might be employed to reduce the number and effect of turning movements along major thoroughfares.

Traffic Engineering Improvements on the Roadway. The installation of such devices as median strips and dividers can be effectively used to reduce turning movements, particularly the left-turn movements

which are so disruptive to thoroughfare efficiency. In some cases, dividers may not be necessary. Some communities have achieved good results simply by limiting, through law, the points at which turning movements may be made. In instances where certain uses generate high volumes of turning movements, special turning lanes, often coupled with traffic lights with turning signals, may be necessary to reduce conflicts between through and turning traffic. None of these devices are new, but they can all be very useful and their application should be considered in any local program intended to reduce frictions between land uses and major thoroughfares.

Controlling Access to Abutting Land Uses. In addition to regulating turning movements through improvements to the thoroughfare itself, such movements can also be reduced by controlling access to the abutting land uses. Following are examples of this approach:

(1) Frontage roads. The frontage road, or marginal access road, is receiving growing recognition as a means of reducing the number of access points on major thoroughfares. As Figure 3 illustrates, these roads are designed to run parallel to the thoroughfare, providing access to abutting properties. Access points to and from the major thoroughfare are thereby restricted to a few selected points, thus enabling the more efficient movement of traffic on the thoroughfare. Such facilities would be costly and time-consuming to build. However, in many areas, they may offer the only hope of adequately controlling access. The use of frontage roads should be considered for possible inclusion in any major roadway improvement project.

(2) Other methods of controlling the design and number of access

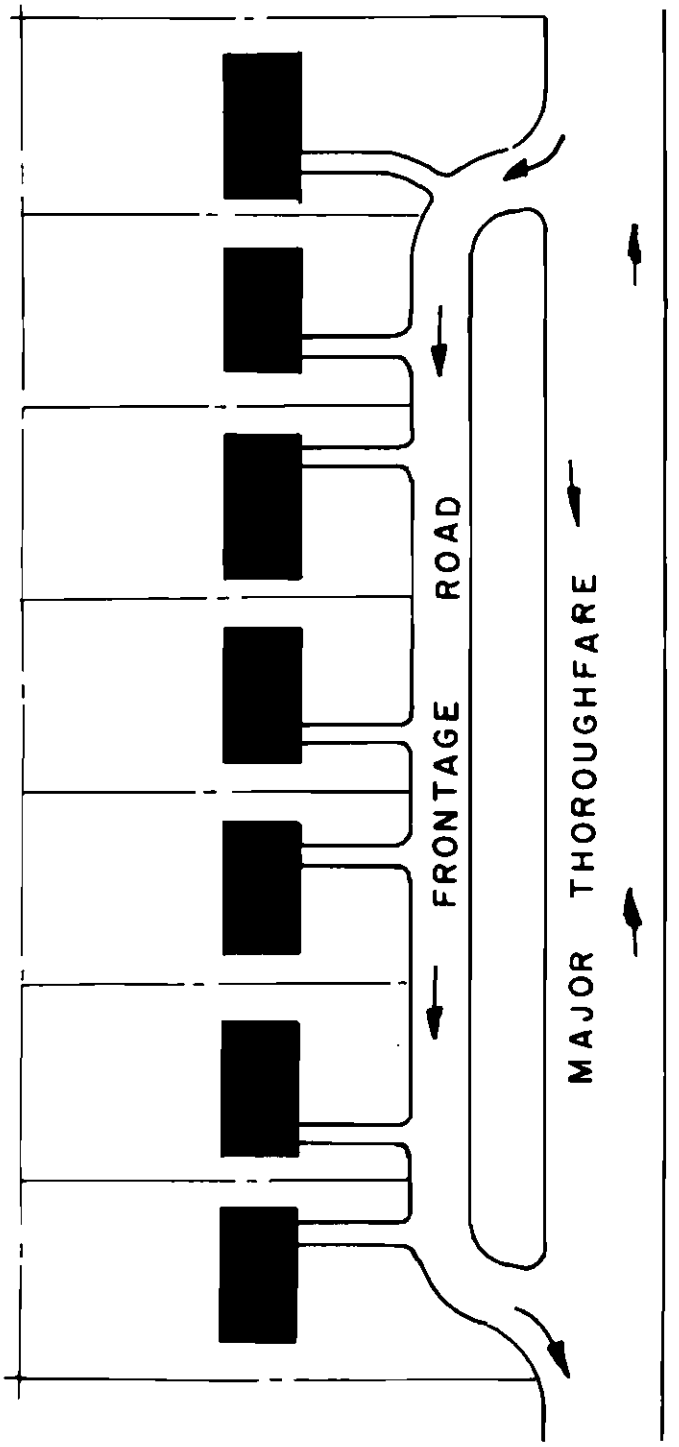


Figure 3. A Frontage Road.

points. A large degree of access control can be achieved simply through the adoption of standards regulating the number, design, and construction of driveways and other entrances onto major thoroughfares from individual pieces of abutting property. By controlling the width and other physical characteristics of the entrances and the numbers of such entrances, an added degree of roadway safety and efficiency can be achieved. The construction of entrances could be controlled through the issuance of permits. Although this approach may achieve only limited results, every community should have available means for regulating the design of curbcuts, driveways, and other access points.

(3) Land acquisition. The limited use of land acquisition powers for purposes of controlling access along portions of major thoroughfares should not be overlooked by local officials. Plans for acquiring right-of-way for street widenings, in particular, should not be implemented until the possibilities of using the newly-obtained public land to restrict access, as well as improve the thoroughfare, are considered.

Unfortunately, local officials will find, in most instances, that they are not empowered by state law to acquire land along major thoroughfares for access control. State statutes that come closest to authorizing the power are those pertaining to controlled access highways. However, the definition of controlled access, or limited access, highways in most state legislation is not broad enough to apply to major thoroughfares. Florida's definition is an example of what is generally found in most highway codes:

> (8) "Limited access facility." -A street or highway especially designed for through traffic, and over, from or to which owners or occupants of abutting land or other persons have no right of easement or access, light, air, or view by reason of the fact that their property abuts upon such limited access facility or for any other reason. Such highways or streets may be parkways, from which trucks, busses, and other commercial vehicles shall be excluded; or they may be freeways open to use by all customary forms of street and highway traffic (3).

Florida, and the majority of other states, further define the terms "parkway" and "freeway" in such a manner that even the most ambitious person could not apply them to a major thoroughfare.

There are other problems with respect to the controlled access legislation that exists in most states. Often, the power is not extended to local governments, but restricted to highway authorities on the state level. Sometimes, the power may not be broad enough to include all the purposes for which land could desirably be acquired.

Thus, communities interested in using the power should first carefully study existing state legislation. Further, they should anticipate the probability that these statutes will have to be amended before the power can legally be used. Specifically, a study of state laws should answer the following questions:

> What is the definition of a controlled access highway?
>
> Who designates or classifies roadways as controlled access highways?
>
> For what purpose can land or easements be purchased?
>
> Who is granted the power?

As previously pointed out, local officials will find, in almost every instance, that existing definitions are too restricted. This can be remedied simply by amending the state law to include major

thoroughfares. This amendment should be accompanied by a definition of major thoroughfares. The definition presented in Chapter I could serve as an example.

The authority to designate or classify roadways as major thoroughfares would be another important consideration. State laws pertaining to controlled access highways usually fall into two general groups on this point. Many extend power to all governmental levels within the state. Others, such as Alabama, are more conservative and limit the power to state authorities (4). State statutes should be amended to permit local governments to designate major thoroughfares since such legislation would enable the community to apply the power, without waiting for state approval, along streets where it is deemed necessary.

Local officials should also insure that the legislation is broad enough to include all the purposes for which they wish to acquire land. For example, communities may want to acquire land in order to improve appearance or provide buffers, as well as control access. No effort should be made to amend state legislation until local leaders consider very carefully the purposes for which they intend to use the power. At the present time, property along controlled access highways can be acquired for purposes of controlling access, light, air, and view in the majority of states. Local jurisdictions should be permitted to acquire land along major thoroughfares for these purposes and others that the communities deem necessary.

Finally, local governments should insure that the power to acquire land for these purposes is extended to the local level. Some states have restricted it to state authorities.

In summary, communities should make every effort to expand state controlled access legislation in such a way that it applies to major thoroughfares. Furthermore, the legislation should permit local governments to designate those roadways along which the power can be applied. It should set forth the reasons for which the power can be used and these powers should be broad enough to meet local needs. Finally, it should extend the power of acquisition to the local level.

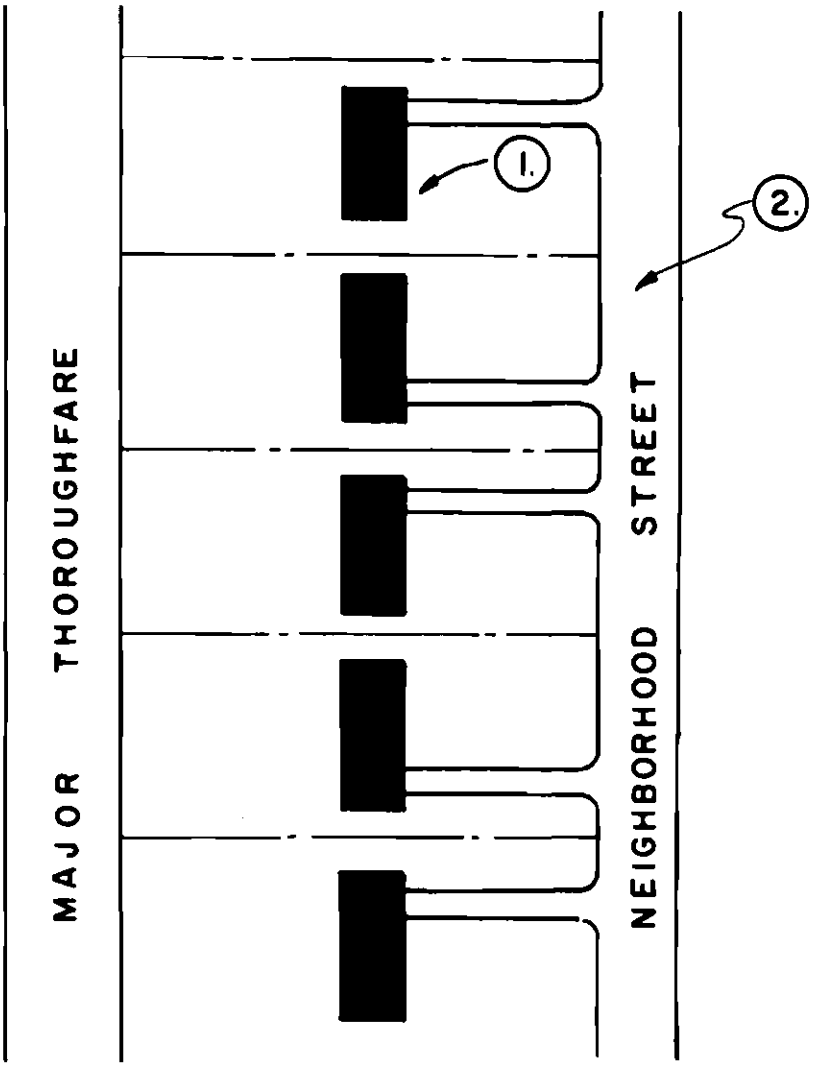
As useful as this power can be, communities should use it with discretion and on a limited basis. Excessive use may compromise the thoroughfare's secondary function of providing access to abutting properties.

Protecting and Encouraging Single-family Residential Development

For many years, a number of subdivisions have been developed according to site designs which include innovations intended to maintain the character and quality of single-family residences which abut major thoroughfares. An example of such a development is the "new-town" experiment in Metropolitan Toronto, Canada, constructed by Don Mills Development Limited. The scheme used in this development is recommended for possible application in other areas where new residential subdivision activity may abut major thoroughfares. As illustrated in Figure 4, this design for residential land adjacent to major thoroughfares includes:

(1) the orientation of the face of the residential structure away from the major thoroughfare;

(2) the provision of access only from the neighborhood street thus eliminating direct-access facilities to the major thoroughfare.



1. RESIDENCE ORIENTED TO FACE INTERIOR NEIGHBORHOOD STREET

2. ACCESS FROM RESIDENTIAL PROPERTY PROVIDED TO INTERIOR NEIGHBORHOOD STREET, NO ACCESS IS PROVIDED TO MAJOR THOROUGHFARE

Figure 4. A Design Scheme for Single-Family Residences Abutting Major Thoroughfares.

The provision of buffer strips between the residence and the major thoroughfare can offer further protection. Either planted buffers or fencing may be used with good results. Where possible, the provision of both is most desirable. The vegetation not only has the advantage of reducing thoroughfare sights and sounds, but of providing an attractive view to passing motorists. Fences can also reduce thoroughfare sights and sounds and may be highly effective as a means of protecting small children from the heavily traveled roadway.

Although most applicable to new residential subdivisions, such devices as buffers, alternate access facilities, and structural orientation away from the thoroughfare can be useful in older areas. It will, of course, be more difficult to readjust access facilities in older areas. However, in some instances, it can be done. In areas where double-frontage lots or alleys exist, it may be possible to provide access to the rear of the residential property, while, at the same time, eliminating access to the major thoroughfare. If adequate buffers are provided, structural reorientation may not be necessary. It is possible to achieve a degree of success simply by readjusting living habits to take better advantage of the back of the house and backyard space. A recent study of a heavily-traveled thoroughfare in Denver, Colorado, revealed that abutting residents managed a partial adjustment simply by using the back of their homes and their backyards more (5).

There are a number of ways by which a community might implement programs designed to protect and encourage residential development along major thoroughfares. In the case of new development, local

officials could make design principles such as access control, structural orientation and buffers a requirement by law. Such design standards could be included in subdivision regulations. The planting or construction of buffers might be financed through special assessments. Further, it may be possible to work out cooperative programs between the local government and the private citizen. In the case of buffers, for example, the individual home owner might donate a portion of his property or simply an easement on his property to the local government. In return, the government could provide and maintain buffer strips on that property. Finally, land could be acquired, according to procedures discussed previously, for purposes of controlling access and providing buffers.

For maximum results, a combined program including the provision of buffers, structural orientation away from the major thoroughfare, elimination of direct access to the major thoroughfare, and the provision of alternate means of access should be encouraged and implemented wherever possible. However, limited approaches, such as the provision of buffers only, can also be effective. A minimum of effort can make a substantial contribution to the preservation and promotion of the single-family residence as a land use along major thoroughfares.

Obsolete Land Uses and Land-Use Patterns

Following are some recommended means with which to deal with the problem of older strip-retail districts and other areas where obsolete land uses or land-use patterns may disrupt thoroughfare efficiency:

(1) Right-of-way acquisition. These powers, previously suggested for other purposes, also offer possibilities for eliminating

undesirable land uses in strip-retail or other areas. If right-of-way is about to be acquired for street widening or other improvements, local officials should take advantage of the opportunity to determine whether the proposed acquisition of land can be planned to include abutting uses and structures which are detrimental to the operation of the major thoroughfare.

(2) Urban renewal. Urban renewal, where applicable, is the most flexible means available to communities for overcoming obsolete land patterns, such as those which often exist in old strip retail areas. It lends itself to the clearance and redevelopment of large areas of land. In addition, urban renewal powers can also be used for purposes of structural rehabilitation and conservation. Once policy has been established pertaining to the use or re-use of land, a variety of public powers can be coordinated, through urban renewal programming, into one unified effort designed to implement that policy. The comprehensive character of urban renewal is its greatest single advantage. Local communities should use the power, whenever possible, in conjunction with efforts to implement carefully coordinated plans developed for major thoroughfares and the use of land abutting them.

Conclusion

In spite of the time and costs involved in the preparation and development of individual thoroughfare plans, they are well worth the effort. Major thoroughfares play a vastly important role in the street pattern of any area. Certainly, the operation of these roadways is greatly influenced by the use of land abutting them. In addition,

the very proximity of this land to major thoroughfares makes it uniquely different from practically any other land area in a city. These factors alone would justify the need for special treatment for major thoroughfares and abutting land.

There are other reasons. Individual thoroughfare plans should also result in a more economical use of community funds. In their role as comprehensive statements of policy, they can provide the basis for intelligent expenditures based on overall needs. The dangers of wasteful spending on isolated projects not in keeping with local policy are reduced. Further, plans of this nature provide the opportunity to undertake a coordinated attack on problems resulting from land use--thoroughfare conflicts. For example, roadway widening projects can be expanded to regulate access and the use of land. Divider strips can be installed as a part of paving projects to aid in the reduction of turning movement problems.

Finally, as stated previously, these plans would afford the opportunity to deal with the unique problems of every thoroughfare. Even the more common problems, such as the four previously discussed, may be caused by localized factors along specific thoroughfares, further justifying the value of individual thoroughfare plans.

There have been efforts in the past to develop plans similar to the type advocated. One of the best examples is a study published in 1959 by the Pittsburgh, Pennsylvania, Regional Planning Commission, entitled Route Eight Study, A Proposal for Highway Renewal, which is recommended as a guide to local communities (6).

It is emphasized, once again, that the conflicts between major

thoroughfares and abutting land uses will inevitably exist to some degree. The plan approach, including the methods discussed with relation to relieving the four problems considered, is not presented as an ultimate and total solution. It is, however, strongly recommended as a means of effectively improving the land use--major thoroughfare relationship and increasing thoroughfare efficiency. Problems resulting from land use--major thoroughfare conflicts have reduced the efficiency of many of these roadways to a critical point. In the future, it is imperative that communities place great emphasis on the development of plans for individual major thoroughfares and the land abutting them.

A P P E N D I C E S

APPENDIX A

ILLUSTRATIONS OF 1959 LAND-USE CHARACTERISTICS ALONG THREE SELECTED MAJOR THOROUGHFARES IN ATLANTA, GEORGIA

St.	Key Intersecting Streets	Distance from Origin	Dominant Land-Use Characteristics
PEACHTREE STREET	Plaza Park (Originating Point)	0.00 miles	A downtown area. Heavy shopping and office activity here. Principal uses include office buildings, retail specialty shops, major department stores, motion picture theatres, restaurants, night clubs, and hotels.
	Forrest Avenue	0.85 miles	Fringe C.B.D. area. Office buildings, theatres, retail specialty shops in evidence. Development not as intensive as in downtown areas. Unlike C.B.D., parking lots, gas stations located here. Other uses include a motel, a high-rise apartment building, several churches, and a hospital.
	North Avenue	1.43 miles	
	Fifth Street	1.78 miles	Predominantly a neighborhood strip commercial district called the Tenth Street Area. Among uses generally found here are supermarkets, drug stores, appliance stores, clothing stores, bakeries, delicatessens, service stations, variety stores, and a branch bank. An old area, many of retail outlets must be considered marginal. There is some office development near Fifth Street.
	Tenth Street	2.16 miles	
	Fourteenth Street	2.53 miles	

General Directional Tendencies: North and Northeast

Not to Scale

Figure 5. Peachtree Street--Sections of General Land-use Characteristics from Plaza Park to Fourteenth Street. (Continued)

St.	Key Intersecting Streets	Distance from Origin	Dominant Land-Use Characteristics
PEACHTREE STREET	Fourteenth Street	2.35 miles	In last stage of transition between residential and office-building use. Several apartment buildings and apartment hotels. Scattered commercial development includes a drug store, restaurants, laundries, gas stations, and a new motel. Public uses include several churches, an art gallery and State Archives Building.
	West Peachtree Street	3.10 miles	
	Spring Street	3.37 miles	
	Expressway Interchange	3.58 miles	A conglomerate of activities, primarily commercial in nature. Near expressway, office development heavy. Commerce is oriented to driving public. There is a neighborhood shopping center, a large number of service stations. Other retail uses include supermarkets, drive-in groceries, restaurants. Apartment development is heavy. Principal public use is a hospital
	Collier Road	4.05 miles	
	Peachtree Battle	5.18 miles	An old residential area that has, thus far, resisted commercial encroachment. However, early stages of transition in evidence. Examples: new laundry, offices and new apartments. Some older homes are converting to multiple-family use. This area known for spacious yards, attractive landscaping. Two churches located here.
	Wesley Road	5.83 miles	

General Directional Tendencies: North and Northeast

Not to Scale

Figure 6. Peachtree Street--Sections of General Land-Use Characteristics from Fourteenth Street to Wesley Road. (Continued)

St.	Key Intersecting Streets	Distance from Origin	Dominant Land-Use Characteristics
PEACHTREE STREET	Wesley Road	5.83 miles	The Buckhead Business District, a strip-retail area. High frequency of gas stations, branch banks, offices. Also a large auto agency, many hard-good outlets, drug stores, super markets, laundries, beauty shops. Some apartments near Wesley Road. Several churches scattered throughout area.
	Roswell Road	6.74 miles	
	Piedmont Road	7.33 miles	An area of heavy recent development. Most notable additions are three shopping centers (including Lenox Square, a regional center), new office buildings, and a number of new car agencies. Most of this land was vacant in 1957.
	Lenox Road	8.13 miles	
	Roxboro Road	8.38 miles	The final zone of study along Peachtree. Dominant use is residential, mostly new apartments of the garden or "shotgun" variety. There is some single-family development here. Only other uses are a church and a service station.
	City Limits	9.30 miles	

General Directional Tendencies: North and Northeast

Not to Scale

Figure 7. Peachtree Street--Sections of General Land-Use Characteristics from Wesley Road to City Limits.

St.	Key Intersecting Streets	Distance from Origin	Dominant Land-Use Characteristics
SPRING STREET	Peters Street	0.00 miles	A downtown zone. Much of this section of Spring on bridge overpassing railroad yards, therefore, has no abutting land uses. Along remainder of street, principal uses include offices, parking lots, the main post office, a railroad passenger terminal, and wholesale warehousing operations.
	Cain Street	1.00 miles	"Automobile Row." Principal uses are used car sales, new car sales, auto repair shops, parts stores, and auto finance companies. Retail concentration at North Avenue includes drive-in restaurant, tailor shop, barber shop, and restaurant. Three gas stations in this zone. Light industry, wholesale, warehousing, office buildings found in southern portions of zone.
	North Avenue	1.72 miles	
	Fifth Street	2.30 miles	Mixed land use. Transition between auto sales, service, and distribution activities. Limited residential activity here, mostly conversions from one to two-family homes.
	Fourteenth Street	2.90 miles	Distribution, wholesale, warehousing, scattered retail uses including two gas stations, two drive-in restaurants.
	Peachtree Street	3.60 miles	No residences. One elementary school.
General Directional Tendencies: North			Not to Scale

Figure 8. Spring Street--Sections of General Land-Use Characteristics from Peters Street to Peachtree Street.

St.	Key Intersecting Streets	Distance from Origin	Dominant Land-Use Characteristics
STEWART AVENUE	Whitehall Street	0.00 miles	Intensive industrial area, featuring wholesale, warehousing, and manufacturing uses. Uses generate heavy truck traffic. Scattered commercial uses include gas stations, auto repair shops.
	Shelton Street	0.50 miles	Mixed district, devoted to residential, commercial uses. Single-family homes frequent, some two-family dwellings. A 137-unit apartment development at University Avenue. A neighborhood strip-retail district at Dill Street features a super market, a drug store, laundries, a beauty shop, some professional offices. Six gas stations and one drive-in grocery here. An elementary school, a church, and the Salvation Army Training Center located here.
	University Avenue	1.33 miles	
	Dill Street	1.58 miles	
	Claire Drive	2.05 miles	Commercial area adapted to the automobile age. Long, extended curb-cuts commonplace. Principal uses include a community shopping center at Lakewood Avenue, a drive-in theatre at Cleveland Avenue, nine gas stations, a bowling alley, seven used car lots, nine trailer sales outlets, a farm implement agency, nine restaurants and road houses, and seven motels. Five mobile home parks offer facilities for more than 400 families.
	Lakewood Avenue	2.20 miles	
	Cleveland Avenue	2.45 miles	
	City Limits	2.70 miles	

General Directional Tendencies: South
Not to Scale

Figure 9. Stewart Avenue--Sections of General Land-Use Characteristics from Whitehall Street to City Limits.

APPENDIX B

TABLE 4. FACTORS FAVORING GROUPED CONCENTRATIONS OVER STRIP OR SCATTERED COMMERCIAL USES

Table 4. Factors Favoring Group Concentrations Over Strip or Scattered Commercial Uses

Factors	Strip Development	Grouped Concentration
Effect on Real Estate	Strip development usually has a depressing effect on contiguous residential land. Contiguous vacant areas tend to be held for speculation in the hope of increasing values. This makes immediate development forbidding. The vacant lots grow up in weeds, again having a blighting effect on nearby residential and commercial development.	Grouped concentrations can segregate themselves with a buffer strip. They can stabilize surrounding uses and make the area more attractive for residential uses.
	The greater perimeter of strip development increases the amount of contiguous area subject to fluctuating values because of commercial activities.	The compact arrangement reduces the perimeter and makes buffer areas possible.
Customer Drawing Power	In a strip development, the only attraction of the business to the consumer is its own goods and services.	The combined goods and services of the stores in a group concentration attract customers.
Pedestrian Danger	Strip development increases vehicular and pedestrian traffic at intersections at the busy time of day.	Most vehicular and pedestrian traffic are segregated from the intersection.
	Haphazard location of driveways increases the points of conflict on busy streets.	Controlled access.

(Continued)

Table 4. (Continued)

Factors	Strip Development	Grouped Concentration
Blight	Normally, strip development has no definite boundaries. The use of the contiguous land remains uncertain, vacant lots become blighted and the surrounding area also deteriorates.	Normally, grouped concentrations have some kind of buffers and the boundaries are usually definite and permanent. This leaves no question as to future development of the surrounding area.
Economic Land Use	Linear, uneconomic use of land. Single use parking and larger alleys.	Compact, economic use of land. Multi-use parking and shorter alleys.
City-Wide	Strip development requires the consumer to use streets to get from one shop to another	The consumer uses special internal walks designed for his convenience and safety.
Social	Individual shops may be more conveniently located for a few.	A single location creates a more important and centrally located meeting place for the residents of surrounding neighborhoods.
Community Services	Scattered locations present a more difficult and expensive problem of providing necessary police and fire protection and community services.	Police and fire protection and other community services can be more efficiently and economically rendered at less cost to the taxpayer.

Source: Tulsa, Oklahoma, Metropolitan Area Planning Commission.

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